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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/052,553	01/23/2002	In Chul Jeong	0465-0838P-SP	5490
2292 7590 04/06/2007 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			EXAMINER STINSON, FRANKIE L	
			ART UNIT	PAPER NUMBER
			1746	
SHORTENED STATUTORY PERIOD OF RESPONSE		NOTIFICATION DATE	DELIVERY MODE	
3 MONTHS		04/06/2007	ELECTRONIC	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary

Application No.

10/052,553

Applicant(s)

JEONG ET AL.

Examiner

FRANKIE L. STINSON

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,4,9-22 and 24-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,9-22 and 24-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. The indicated allowability of claims 13-16, 24, 25, 27 and 28 is withdrawn in view of the newly discovered Japan'594 reference. Rejections based on the newly cited reference(s) follow.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3, 4 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Brucken (U. S. Pat. No. 2,881,609) or Constantine (U. S. Pat. No. 2,590,295) in view of either Sykes (U. S. Pat. No. 2,817,415) or Carr (U. S. Pat. No. 2,311,155).

Re claim 1 Brucken and Constantine are each cited a washing machine (see Constantine, col. 1, lines 15-19) comprising.

a first tub (20 in Brucken and 10 in Constantine);

a second tub (21 in Brucken and 11 in Constantine) disposed in the first tub;

at least one circulation duct (27 in Brucken and 18 in Constantine) operatively coupled with the first tub to receive air from the second tub, dehumidify the air and recirculate the dehumidified air back into the second tub to dry laundry in the second tub during a drying operation of the washing machine; and

a water supplying duct (30c in Brucken and 31 in Constantine) for supplying external water to an upper part of the inside wall of the least one circulation duct to flow down the duct to dehumidify the air in the at least one circulation duct primarily by flowing

down the inner wall coming in direct contact with the air in the circulation duct, that differs from the claim only in the recitation of the circulation duct having a plurality of grooves that are of a helical configuration, for prolonging a heat exchange time period. The patent to Sykes and Carr are each cited disclosing the arrangement in a heat exchanger, where the heat exchanger is provided with grooves (as at 22 in Sykes and 25, 26 in Carr) to prolong the contact time of the humid air/vapor and the flow water. It therefore would have been obvious to modify the arrangement of either Brucken or Constantine, to include grooves as taught by either Sykes or Carr, for the purpose of ensuring that the humid air/vapor receives the full effect of the falling water. It is an old and well known and an established principle in the heat exchanger art, that the efficiency of heat exchange/transfer in the pipe/tube, is increased when the pipe/tube is roughened or grooved versus the same pipe/tube where the surface is smooth, i.e., turbulent flow being more efficient in transferring heat than that of a laminar flow. As for the grooves being helical, the same is of little patentable weight since no new or unobvious results are seen or have been set forth. Nonetheless, Sykes discloses the helical configuration as claimed. Re claim 3 and 4, Brucken (as at 23 and 22) and Constantine (as at 19 and 24) disclose the fan and heater. Re claim 19, Brucken discloses the pulsator. Re claim 20, Brucken and Constantine disclose the drain. Re claim 21, Brucken discloses the spaced location as claimed. Re claim 22, Sykes discloses the plurality of grooves.

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4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over the cited prior art as applied to claim 1 above, and further in view of either Krupsky (U. S. Pat. No. 3,402,576) or Brucken et al. (U. S. Pat. No. 3,216,126).

Claim 10 defines over the applied prior art only in the recitation of the external air supplying duct for supplying external air towards the at least one circulation duct, said external air supplying duct has having an outlet disposed in the said at least one circulation duct; and an air fan disposed to draw the external air into the external air-supplying duct. The patents to Brucken'126 (as at 82) and Krupsky (as at 81) are cited disclosing that it is old and well known to provide a laundry dryer, which also comprises a washing machine, external air supplying duct for supplying external air towards the at least one circulation duct, said external air supplying duct has having an outlet disposed in the said at least one circulation duct; and an air fan disposed to draw the external air into the external air supplying duct. It therefore would have been obvious to one having ordinary skill in the art to modify the device of either Brucken'609 or Constantine'295, to include an external air supply as taught by either Krupsky or Brucken'126, for the purpose of allowing the entry of fresh air to the drying air circuit as is common in the art. As for the external air fan, in the arrangement of Brucken'126, external air is forced into the circulation duct by the fan already, to employ a second fan, or relocated the fan to the entrance, is deemed to be a mere extension/duplication/rearrangement of the teachings of Brucken'126 and therefore and of little patentable weight (see **MPEP 2144.04 REVERSAL, DUPLICATION OR REARRANGEMENT OF PARTS**).

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5. Claims 9, 11, 12, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applied prior art as applied to claim 1 above, and further in view of WIPO'169 (WIPO 93/17169) or Fukumoto et al. (U. S. Pat. No. 6,282,928).

Claims 9 and 11 define over either Brucken or Constantine only in the recitation of a fan, for supplying of external air to an outer surface of the circulating duct. WIPO'169 (see page 4, lines 21-25, see fig. 1) and Fukumoto (col. 6, lines 39-49) are each cited disclosing a fan (19 in WIPO'169 and 36 in Fukumoto) for supplying external air to the outside surface of the circulating duct (13 in WIPO'169 and 13 in Fukumoto) as claimed. It therefore would have been obvious to one having ordinary skill in the art to modify the device of either Brucken or Constantine, to include a fan as taught by either WIPO'169 or Fukumoto, for the purpose of enhancing the water removal efficiency of the condenser. It is old and well known in the heat exchanger art, that the efficiency of heat transfer is increased when the transferring fluids have movement. Re claim 17, no patentable distinction is deemed to exist between the fan as claimed and the fan as taught by Fukumoto, Constantine or WIPO'169. The same are the functional equivalent of each other in that they both are employed to move external air to circulation duct for dehumidification purposes. Re claim 12, Fukumoto discloses the fin (39) as claimed.

6. Claims 13-15, 24, 25 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan'594 (Japan 11-128594) in view of either Muller (U. S. Pat. No. 4,154,003) or Pugh (U. S. Pat. No. 2,451,692).

Re claims 13 and 31, Japan'692 is cited disclosing a washing machine, comprising:

a first tub (5);

a second tub (6) disposed in the first tub;
a structure (38, 18 in fig. 1 and 31, 19, in fig. 6) operatively coupled with at least one of the first and second tubs to receive air from the second tub, and recirculate the air back into the second tub to dry laundry in the second tub during a drying operation of the washing machine;

a feed water valve (not shown, but typical) for supplying external water to the washing machine; and

a tub cover (16, see fig. 2) for discharging the external water to inner walls of the first tub to dehumidify air in the first tub during the drying operation that differs from the claims only in the recitation of the structure also dehumidify the air and recirculate the dehumidified air back to the second tub. Muller (as at 92, 94, 96) and Pugh (as at 29) disclose structure for dehumidifying the air and recirculate the same to a second tub as claimed. It therefore would have been obvious to modify the structure of Japan'594, to include dehumidifying as taught by either Muller or Pugh, for the purpose of further dehumidifying the air of any free or residual moisture. Re claim 14, Japan'594 discloses the water-supplying duct. Re claims 15, 24 and 25, Japan'594 discloses the plurality of holes (as at 46, 47, see fig. 1).

7. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over the applied prior art as applied to claim 13 above, and further in view of Fukumoto et al. re claim 16, Fukumoto is cited as applied to the subject matter of claim 12 as noted above.

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8. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over either UK'559 (United Kingdom 2 075 559) or Fukumoto et al.'928 in view of either Liu et al. (U. S. Pat. No. 6,578,627) or Mautsch (U. S. Pat. No. 1,920,313).

Re claim 18, UK'599 and Fukumoto (see fig. 3) is cited disclosing a washing machine, comprising :

- a first tub (14 in Fukumoto and 1 in UK'599);

- a second tub (13 in Fukumoto and 3 in UK'599) disposed in the first tub;

- a circulation duct (38 in Fukumoto and 9 in UK'599) operatively coupled to the first tub receive air from the second tub, dehumidify the air and recirculate the dehumidified air back into the second tub to dry in the second tub during a drying operation of the washing machine that differs from the claim only in the recitation of the multiple circulation duct and the single cooling fin arrangement. The patents to Mautsch and Liu are each cited disclosing a condenser/heat exchanger, where there is provided the arrangement of a single fin and multiple ducts (see the embodiment of fig. 10 in Mautsch and col. 3, lines 9-15 in Liu). It therefore would have been obvious to one having ordinary skill in the art to modify the condenser/heat exchanger in either UK'599 or Fukumoto, to employ the single fin and multiple tube arrangement as taught by either Mautsch or Liu, since Mautsch and Liu disclose various tube and fin arrangements/embodiments, which are interchangeable with each other. It is known in the heat exchanger art to vary the tube and fin arrangement, i.e., number or tubes, number of fins or the surface areas of the fins and pipe, for optimum heat exchange efficiency.

9. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over the applied prior art as applied to claim 18 above, and further in view of either Sykes or Carr.

Claim 26 defines over the applied prior art only in the recitation of the duct having a plurality of grooves with a helical configuration for prolonging a heat exchange time period of the hot humid air by reducing the flow of speed of water along the inner walls of the circulation duct. Therefore, the patents to Sykes and Carr are cited as applied to the corresponding subject matter of claim 1 above.

10. Claims 27 and 28 rejected under 35 U.S.C. 103(a) as being unpatentable over the cited prior art as applied to claim 18 above, and further in view of Japan'594.

Claims 27 and 28 define over the applied prior art only in the recitation of the cover for discharging external water during drying as instantly claimed. Japan'594 is therefore cited as applied to the corresponding subject matter of claims 13, 24 and 25 above.

11. Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over the cited prior art as applied to claim 1 above, and further in view of Japan'594, Claims 29 and 30 define over the applied prior art only in the recitation of the cover for discharging external water during drying as instantly claimed. Japan'594 is therefore cited as applied to the corresponding subject matter of claims 13, 24 and 25 above.

13. Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection. However, in regard to the remarks on Fukumoto references as applied to the subject matter of claim 18, namely that Fukumoto fails to disclose a source of cool air to cool a finned condensation duct,

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please note in Fukumoto the forced air source (col. 6, lines 39-48). Also, note the equivalent teachings in UK'599.

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In Japan'895, Miczek, Webber, Sebald, Weits et al., Oosterkamp, Baker et al., Beyer, Brill et al., Schneible, Martocello, Sr., Carraway, Uehling, Ross and Wem, note the condensers. In Patterson, Germany'078, EPO'569, Toma and Frey, note the feeding of water to the inside of a first tub during a drying process.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to FRANKIE L. STINSON whose telephone number is (571) 272-1308. The examiner can normally be reached on M-F from 5:30 am to 2:00 pm and some Saturdays from approximately 5:30 am to 11:30 am.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr, can be reached on (571) 272-1700. The fax phone number for the organization where this application or proceeding is assigned is 571-272-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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FRANKIE L. STINSON
Primary Examiner
GROUP ART UNIT 1746